R E P O R T R E S U M E S

ED 011 391 CG 000 087

PERSONALITY AND MOTIVATIONAL FACTORS IN RESPONSES TO AN ENVIRONMENTAL DESCRIPTION SCALE.

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REPORT NUMBER GIT-RM-67-1 PUB DATE MAR 67
EDRS PRICE MF-$0.09 HC-$1.40 35P.

DESCRIPTORS- *ENVIRONMENT, *COLLEGE STUDENTS, *STUDENT ATTITUDES, *TEST VALIDITY, TESTS, TABLES (DATA), RESEARCH PROJECTS, EVALUATION, STATISTICAL ANALYSIS, FACE COLLEGE AND UNIVERSITY ENVIRONMENT SCALES (CUES), ATLANTA

MANY OF THE 150 ITEMS FORMING THE FACE COLLEGE AND UNIVERSITY ENVIRONMENT SCALES (CUES), AN INSTRUMENT FOR ASSESSING COLLEGE STUDENT PERCEPTIONS OF THEIR ENVIRONMENT, FALL WITHIN THE CATEGORY OF HIGH RESPONSE VARIABILITY (50 PERCENT TRUE AND 50 PERCENT FALSE RESPONSES). THE AUTHOR HYPOTHESIZED THAT THIS VARIABILITY IS ATTRIBUTABLE TO CERTAIN CHARACTERISTICS OF THE ITEMS AND OF THE RESPONDENTS. TO TEST THIS NOTION, THE RESPONSES OF 570 GEORGIA INSTITUTE OF TECHNOLOGY FRESHMEN TO THE CUES ITEMS WERE RELATED TO FOUR CHARACTERISTICS OF THE ITEMS, PERSONALITY AND MOTIVATIONAL VARIABLES, AND THE STUDENTS' REPORTED FAMILIARITY WITH THE GEORGIA INSTITUTE OF TECHNOLOGY ENVIRONMENT. A COMPLETE DESCRIPTION OF ALL VARIABLES, THE GROUPING AND ANALYSIS PROCEDURES, AND DISCUSSION OF RESULTS ARE INCLUDED. TWO ITEM PARAMETERS (FACE'S DEFINITION OF ITEM CONTENT, AND THE MEAN CERTITUDE THAT STUDENTS ASSIGNED TO THE ACCURACY OF THEIR ITEM RESPONSE) AND THE 11 PERSONALITY AND MOTIVATIONAL FACTORS WERE FOUND TO BE RELATED TO ITEM RESPONSE AND ITEM VARIANCE. ENVIRONMENT FAMILIARITY AND AMBIGUITY WERE NOT RELATED TO ITEM RESPONSE AND ITEM VARIANCE. REFERENCES, TABLES, FACE'S DESCRIPTIONS OF FIVE CUES SCALES, AND A SUMMARY OF 25 CUES ITEMS AND THEIR ITEM PARAMETERS ARE APPENDED TO THE REPORT. (FS)

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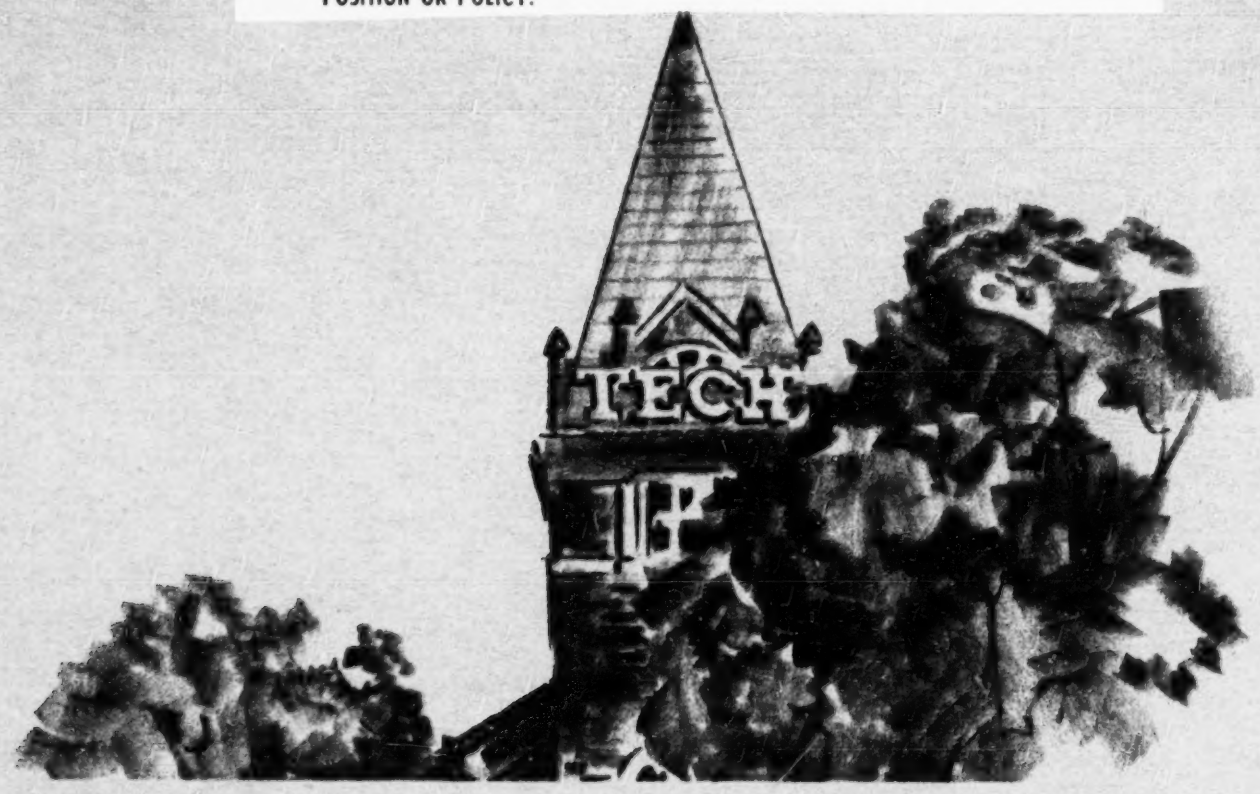

Personality and Motivational Factors in Responses to an Environmental Description Scale

RESEARCH MEMORANDUM 67-1

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March, 1967

Office of Evaluation Studies

GEORGIA INSTITUTE OF TECHNOLOGY

Atlanta, Georgia

ED011391

CG 000 087

SUMMARY

Personality and Motivational Factors in

Responses to an Environmental Description Scale

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The purpose of this study was to determine to what extent students' perceptions and descriptions of the Georgia Tech environment are influenced by factors which are independent of the environment itself. Where students are required to respond either "true" or "false" to a set of statements which might be characteristic of the environment such as its size, friendliness, student-faculty relationships, etc., it is not unlikely that some of their responses will be determined -- at least partially -- by certain personality and motivational characteristics of the students, and also certain properties of the items or statements about the environment. These effects can be expected to be greatest when the statement concerns aspects of the environment -- e.g., students manipulating a professor by means of guile or duplicity -- which are not easily verified -- i.e., the stimulus cues are absent or at best ambiguous.

The set of statements describing the environment used in this study were the 150 items forming the College and University Environment Scales (CUES) developed by Pace (1963). The author of the CUES describes them as consisting " --- of 150 statements of college life -- features and facilities of the campus, rules and regulations, faculty, curricula, instruction and examinations, student life, extracurricular organizations, and other aspects of the institutional environment which help to define

the atmosphere or intellectual-social-cultural climate of the college as students see it. The test is, therefore, a device for obtaining a description of the college from the students themselves, who presumably know what the environment is like because they live in it and are a part of it" (Pace, 1963, p. 2). A sample statement or item as it is called in psychometrics is "Students quickly learn what is done and not done on this campus." The student is to respond either "true" or "false" to each item, depending upon whether he feels the statement is or is not characteristic of the college environment. It seems apparent that in using student responses to describe the college environment, the accuracy of such descriptions is dependent upon how uniform the students' responses are, i.e., accuracy increases as concensus increases. An item where 50 percent of the sample responds "true" and 50 percent responds "false" can hardly be considered descriptive of the Georgia Tech environment " -- as students see it." Statistically, such an item has maximum variability or variance. An item where 99 percent or more of the sample responds the same reflects not only marked concensus but extremely low item response variability. Many of the CUES items unfortunately fall within the category of high response variability.

In the present study, it was hypothesized that a portion of the variability in responses to the CUES items -- contrary to the assumptions underlying the construction and use of these scales -- is attributable to certain characteristics of the items and the respondents. To test this notion, the responses of a sample of Georgia Tech freshmen to the items of the CUES were related to four characteristics of the items, eleven personality and motivational variables, and the students' reported familiarity with the Georgia Tech environment.

In particular, it was hypothesized that three of the four item parameters -- experts' judgments of item ambiguity, Pace's definition of item content, and the mean certitude the students assigned to the accuracy of their item response -- were related to item response and item variance. In addition, it was hypothesized that the eleven personality and motivational variables -- selected in terms of their presumed relevance to the content of the items -- and the index of familiarity were related to item response.

The results confirmed both of these hypotheses, except for judged item ambiguity and familiarity. The failure of judged item ambiguity to correlate with item variance suggested that students' perceptions of and responses to selected features of the environment may be independent of the number and clarity of environmental cues relevant to a given feature. Students apparently have well-formed perceptions and cognitions of the Georgia Tech environment before they arrive here which permit closure under ambiguous stimulus input, and which "gate-out" or modify cues which are discrepant with these cognitions. Right or wrong, the student is relatively sure of what he expects to find here, regardless of how difficult it is to verify these expectations. It is quite likely that this set of perceptions and cognitions -- which we might broadly term the "image" of Georgia Tech -- is shared by people outside the academic community, e.g., parents, high school counselors, businessmen, etc.

Students who report high familiarity with the Georgia Tech environment are no more consistent in their judgments of environmental characteristics than are students low in familiarity. Again, it would appear that the important mediating agents are the students' expectations of Georgia Tech.

The stability of these perceptions and cognitions is not related to or reflected in reported familiarity. Programs designed to acquaint or orient the new student to Georgia Tech had best begin by finding out what these pre-formed expectations are, then reinforcing those that are "accurate" and reshaping those which are "distorted."

In terms of the use of the CUES, the data indicate that some of the items are significantly influenced by certain personality and motivational properties of the student. Rather than reliably assessing the characteristics of the environment of interest, these items more nearly reflect the personality and motivational features of the student. It is felt that these components of the item variance -- i.e., variance due to the environmental characteristic and variance due to the selective personality and perceptual structure of the student -- may not be meaningfully separated. Under any ambiguous stimulation -- whether it be cue indeterminancy or unfamiliarity with the task -- where a response is required, the student is going to fill in the "gaps" somehow, whether it be at random or by means of a particular perceptual and cognitive frame.

Several avenues of further inquiry are opened up when it is demonstrated -- as has been done in this study -- that students' perceptions of the college environment do not adequately reflect, in some cases, its actual physical and psychological properties. The mechanism by which these student expectations or "image of Georgia Tech" are formed remains undefined and in need of study. We might also ask whether discrepancies between the incoming student's expectations and perceptions of Georgia Tech and the actual properties of the institution as he later perceives them are

related to his subsequent educational behaviors, e.g., academic achievement, transfer from one major to another, withdrawal from the institute, etc. What about the perceptions or "image" of Georgia Tech held by non-student and extra-institute populations? Are they the same as the students? Are they what the Institute is trying to project? These represent only a few of the questions susceptible to further investigation.

Personality and Motivational Factors in Responses to an Environmental Description Scale

In recent years a considerable portion of educational research has been concerned with the study of environmental or situational determinants of observed educational behaviors. While most of this research has been limited to the college environment, the rationale and procedures employed with the college setting are readily generalized to other environments and other behaviors. Numerous college environmental assessment techniques have been developed which purport to measure in some sense the dominant characteristics of the college environment. Perhaps the most notable in use to date are Stern's College Characteristics Index (1958) and Pace's College and University Environment Scales (1963). In using scales like these, the typical procedure is to average responses from a set of respondents who are considered homogeneous with respect to some characteristic of interest, and report these mean values as describing or profiling the particular environment studied. Such patterns of expected values can then be examined for differences over time, among groups, or across college environments (Stern, 1963).

If we treat a given environment as a constant set of stimuli at any given point in time, then variability in response to this set of stimuli should be attributed to random error or to selected characteristics of the respondent. Foremost among such characteristics of the respondent we might specify stylistic variance -- such as responding in a socially desirable or acquiescent manner -- reliable personality differences, or

differences in the perception of and the meaning attributed to the stimuli. Alternatively, it may be that the respondents are not attending to the same elements within the set. Thus, for a complex environment some subjects may be responding to one subset of elements, while others may be responding to another subset. Inequality of the two subsets of cues, even if they overlap, could lead to different responses to the same item. Whichever the case, for purposes of profiling an environment, the variability about the expected value must be treated as error variance.

To indicate the extent of this error variance, in one sample of 611 fall term 1965 Georgia Tech freshmen the range of item variances for the 300 items of the College Characteristic Index was .009 to .250, with the maximum possible being .250. The median item variance was .167. Since the variance of any scale is a function of the variances and intercorrelations of the items comprising that scale, this rather large median item variance suggests considerable variability in scale scores, and thus considerable error in assessing characteristics of the environment. Pace aptly described this case when he said " --- what is really characteristic of the school is that students disagree about its characteristics!" (1963, p. 37).

Where substantial item variances obtain on a college environment scale, a major problem is encountered in deciding what is the most appropriate method of scoring the scale. A more important and interesting question affecting both the substantive development and construction of such scales, concerns whether this error variance can be accounted for by selected

characteristics of the respondents and the items themselves. That is, can we explain, in part, the lack of concensus in describing a certain aspect of the college environment in terms of properties of the items and respondents rather than the environmental aspect being sampled.

When examining various environmental scales like the College and University Environment Scales, one notices initially that the items define roughly two classes; the first consisting of items that are easily verified by scanning the environment, e.g., "there are no fraternities or sororities", and the second containing items involving ambiguous input, e.g., "personality, pull, or bluff get students through many courses." Rather than dichotomies, these classes are probably best treated as defining a continuum from factual to judgmental or unambiguous to ambiguous.

Certainly, the factual or unambiguous items have the property of being either correct or incorrect and require direct intercourse with the environment, or availability of reliable resources for appropriate response. On the other hand, items requiring judgment of environmental characteristics which are not so easily verified seem more prone to the effects of selective perceptual or personality processes. Such items could be expected to induce greater variability of response than factual items. For example, a student who is abasing, dependent, and fearful of his academic performance, regardless of his ability, may be quite defensive in response to items like the one cited previously relating to getting through courses. A dominant, aggressive, and exhibitionistic student might respond differently to the same environmental input.

Another relevant aspect of this problem is the familiarity or sampling dimension. Extrapolating from perceptual learning studies (Wohlwill, 1966), we might expect a change in college student perceptions towards increased veridicality as a result of increased sampling of the environment. Again, however, certain properties of the individual might be tied to parameters of this function, e.g., the first derivative, as when some students are more resistant to perceptual change under conditions of increasing input than are others. Nevertheless, the amount and type of environmental cues available to and utilized by the student in making a response should be related to item response variability.

That point in time when lack of familiarity is probably greatest and student perceptions are most likely to be influenced by noninformational or misinformational factors is prior to registration for the first term at the University. At this point, we might expect greater response uncertainty and the more pronounced influence of personality, motivational, and attitudinal factors upon item response (Cronbach, 1950; Gage, Leavitt, and Stone, 1957).

These comments form the background for the hypothesis being examined in the present study. Simply stated it is that a significant portion of what is presently assumed to be random error variance in scores on a selected college environment scale like the College and University Environment Scales can be attributed to the nonrandom effects of personality and sampling processes as they are elicited by selected item characteristics.

In particular, it is postulated that item ambiguity and item content are reliably related to item variance, and that under certain conditions, e.g., high item ambiguity, these item characteristics lead to the increased effects of selected personality and sampling variables upon item response.

The evidence relating to subject correlates of responses to environmental scales is somewhat sparse (Herr, 1965; McFee, 1961; Saunders, 1962). After an extensive factor analysis of the College Characteristics Index and its companion scale, the Activities Index, Saunders concluded that the scale scores of the environmental measure were independent of the personality of the respondent. This conclusion was based upon the finding that, in general, the vectors defining each Index spanned a unique subspace of the total factor space. These data were not, however, completely "clean", there being some confounding of factor structures. Using the same scales, McFee arrived at the same conclusion. In contrast, Herr in studying the High School Characteristics Index obtained significant relationships between scores on this measure and certain ability and biographical variables. Also of interest for the present study was Saunders' and Herr's finding of a rather substantial error variance for the environmental measures employed.

METHOD

Measures Employed.

Environmental Measure. The college environmental scales selected for study were the College and University Environment Scales (Pace, 1963).

This inventory consists of 150 items, which are broken down into five non-overlapping scales of 30 items each. The five scales, labelled practicality, awareness, community, propriety, and scholarship were defined on the basis of a factor analysis of the intercorrelations among the means of the 30 College Characteristics Index scales for a sample of 50 colleges and universities. Items for the CUES were then selected from the 300 CCI items in terms of how well a given item defined one of the five scales. Descriptions of the five scales are provided in Appendix A.

Subject Variables. The personality and motivational variables used in this study were selected in terms of their hypothesized relationships with the content of the CUES items as defined by Pace (1963). Nine of the personality scales were drawn from the 22 scales of Jackson's Personality Research Form, Form A, each of which contains 20 items. The scales selected were achievement (ACH), affiliation (AFF), Autonomy (AUT), cognitive structure (C. S.), dominance (DOM), order (ORD), social recognition (S. R.), succorance (SUC), and understanding (UND). Two 10-item scales developed by Marks and Messersmith (1966) relating to motivational aspects of educational behavior were also included. The two scales were level of educational and career aspiration (L. A.), and fear of failure (F. F.).

To evaluate differences due to cue sampling, the student was asked to indicate on a five-point scale, the amount of information he had about, or how familiar he felt he was with, the college environment. Finally, the student was asked to indicate on a five-point scale how certain he was,

when responding to a given CUES item, of the accuracy of that response. Certitude responses were obtained on 138 students.

Procedure.

Item Ambiguity and Content Definitions. The 150 CUES items were independently rated for ambiguity by five trained psychologists. The raters were asked to place the items into five ordered categories on the basis of the "extent to which the item reflected a characteristic of the environment which was difficult to verify perceptually or for which the stimulus cues would tend to be vague, subtle, or conflicting." Each rater was asked to read the entire list of items once before rereading them for categorizing purposes. Items for which there was less than a 4 to 1 agreement were deleted from that part of the analysis relating to ambiguity. No particular institution or college environment was used as a reference for these judgments.

The 150 CUES items were grouped according to content in terms of the five first order factors reported by Pace (1963). The content of an item was defined simply by Pace's description of the scale to which the item belonged.

There were a total of sixteen variables including the dependent variable, subjected to analysis; twelve variables defined on the student, including nine personality and two motivational measures, and an index of familiarity with the environment, and four variables defined on the item, specifically, item ambiguity, item content, certitude, and finally, the depen-

dent variable, the proportion endorsing the item.

Several related analyses were conducted on these data. Before carrying these out, however, the dependent variable was transformed so as to more clearly reflect the parameter of interest, i.e., the item variance. Since the major concern in this study was with item variances and their correlates, the proportion endorsing each item was transformed so that all p values fell within the range $.50 \leqslant p \leqslant 1.00$. This was accomplished by setting $p \geqslant .50$ equal to p, and $p < .50$ equal to 1-p. Since the mean and variance of the binomially distributed CUES items are inversely related under this transformation, p values tending towards .50 indicate increased item variance. For each item then, the dependent variable was simply the larger of the two proportions for either the true or false response.

The item parameters -- ambiguity, content, mean certitude, and proportion responding -- were intercorrelated and their means and standard deviations computed. Those correlation estimates involving item content represent contingency coefficients, while all others are product moment correlations. Although there was some concern that the transformed dependent variable might be nonnormally distributed, when plotted these p values did not depart noticeably from the normal. Item ambiguity and response certitude also approximated the normal distribution, although there was a tendency for the latter distribution to be skewed towards higher certitude values. In addition, the means, standard deviations and intercorrelations among the twelve subject variables were computed.

It was originally intended to compute a 12 x 150 correlation matrix yielding the biserial correlation between a given CUES item and the twelve personality, motivational, and familiarity variables. When the distributions of these subject variables were plotted separately for those responding true and false for each CUES item, it became evident that the biserial correlation -- or any other product moment correlation -- was inappropriate for studying these relationships. In many cases, one or both of the distributions was asymmetric or departed noticeably from the normal in other ways. Because of this condition, it was decided to examine the relationship of item response to the selected subject variables by testing for differences between the cumulative distributions of a single subject variable for the two item response categories. Should a relationship exist, we would expect scores for one of the categories to be shifted more towards higher values. For this purpose a test due to Smirnov and Kolmogorov was used (Siegel, 1956).

As suggested earlier, only those subject variables which were hypothesized to be relevant to the content of a given CUES item were tested. For example, the subject variables of achievement, level of aspiration, and fear of failure were related to those items labelled as scholarship by Pace (1963).

Subjects

The subjects were 570 freshmen entering Georgia Tech in the fall term of 1966. All were tested on the Friday of an Orientation Week that had begun on Sunday. In addition, some of the subjects had attended a Freshman Camp before this.

RESULTS

The means, standard deviations, and intercorrelations of the four item variables are presented in Table 1. This table is shown on page 20. The values involving item ambiguity are based on only 139 cases. Eleven items had to be deleted because they failed to satisfy the criterion of a 4 to 1 agreement among judges.

Comparisons among some of the correlations in Table 1 are not possible because of the differences in the correlational methods employed. Even comparisons among only the contingency coefficients are questionable because of differences in degrees of freedom. As such, conclusions based upon the contingency coefficients should be limited to statements concerning significance, not magnitude.

In spite of these qualifications it is apparent that there is no association between judged ambiguity of an item and the three other item characteristics. The hypothesized correspondence between judged item ambiguity and the students' cognitive and response processes, i.e., certitude judgments and the proportion selecting a given alternative, failed to emerge. Item content, on the other hand, was significantly correlated with both these cognitive and response processes. An inspection of the respective contingency tables indicated that these correlations were due primarily to two of the five content categories; scholarship items tended to have high item certitude means and high p values or low item variances, while the awareness items tended to have low mean certitude values and p values which tended more towards .50 -- high item variances.

Mean item certitude, as an index of the indeterminancy the item possessed for the sample of students, aside from correlating significantly with item content, also correlated substantially with the proportion selecting a given alternative. Items which were described by the sample as eliciting uncertainty as to the accuracy of response, tended to have high item variances.

As previously indicated, only those personality and motivational variables which were suspected on the basis of the congruence of variable and item contents of being sensitive to the hypothesis of a significant item-variable correlation were selected and differentially related to a given CUES item. In addition, the number of CUES items examined was reduced by systematically selecting a smaller number of items which would permit evaluation of the hypothesis of an interaction of item-subject parameters. The 150 CUES items were cross-classified in a 6x5 table defined by item content and mean item certitude, and a total of 25 items selected by randomly choosing one item from each cell. These items and their parameters are given in Appendix B. Since these two item parameters were correlated in the sample, sampling of the items was not uniform over the 30 cells of this table. For each item thus selected, the significance of the relationship between item response and the selected personality and motivational variables was tested by examining differences between the cumulative distributions of the "true" and "false" respondents. Scholarship items were related to achievement, level of aspiration, and fear of failure; propriety items to cognitive structure, dominance, and order; community items to affiliation, autonomy, and succorance; practicality items to affiliation, order, and social recognition; and finally, awareness items to the single variable of understanding. All

25 of the items were also examined against reported familiarity with the environment.

The means, standard deviations, and intercorrelations among the twelve personality, motivational, and familiarity variables are presented in Table 2. The data relating to the selected CUES items and subject variables are summarized in Table 3. Table 2 is shown on page 21, and Table 3 is shown on page 22.

The values for the nine scales in Table 2 which were selected from the Personality Research Form, Form A are quite similar to those reported by Jackson (1965), except for the achievement and affiliation mean scores, for which the Georgia Tech sample was higher in achievement and lower in affiliation.

Although not of direct interest in terms of the hypotheses being examined, comment should be made of some of the correlations in Table 2. Quite noticeable is the lack of correlation between the students' reported familiarity with the college environment and the other variables studied. At least for this set of variables, students' judgments of their familiarity with the institution studied, were independent of the personality characteristics of the respondent.

The intercorrelations among achievement, level of aspiration, and understanding were suggestive of a form of investment in intellectual activity which has both motivational and cognitive components. This pattern is consistent with Murray's (1938) treatment of n Understanding, and perhaps, Tolman's "placing need" (1951). On the other hand, fear of failure, order, and cognitive structure were reliably correlated suggesting that students

who are fearful of their performance tend to approach their personal and situational involvements in a cautious and orderly way, thus apparently reducing the perceived possiblity of sub-standard performance. Students higher in these traits can be viewed as having difficulty in handling environmental situations which depart from the expected.

The tests of association between the selected CUES items -- cross-classified on item content and mean item certitude -- and the personality, motivational, and environmental familiarity variables are summarized in Table 3. Within each cell -- corresponding to a single CUES item for a given level of mean item certitude and content class -- the selected subject variables are listed and the significance of the item-variable association noted. The percentage of significant test statistics -- excluding those for familiarity -- are provided in the marginals.

The notion that personality and motivational variables are related to item response on an environmental assessment scale appears supported by the data; over 30 percent of the relationships tested were significant at the .05 level. This conclusion is offered cautiously, since the test criteria are probably not independent. In addition, the association between item response and the respective subject variables appears to be moderated by the two item parameters studied. Scholarship items were, in most instances, significantly related to all three of the subject variables hypothesized to be relevant to this content class. Similarly, three of the six awareness items were significantly related to understanding, while community items appeared related to both affiliation and succorance. The results for the practicality and propriety classifications were, however,

much less indicative of a reliable effect of personality and motivation upon responses to the CUES items.

Once again, familiarity failed to emerge as a correlate of response variability. Students' reports of their familiarity with the Georgia Tech environment bore little relation to their judgments of its characteristics. This finding has implications for the development and use of programs designed to familiarize the incoming student with his college environment.

Despite the caution noted concerning overall tests of significance, the results of this part of the analysis provide rather good evidence that response to some items of the CUES are dependent upon certain characteristics of the subjects and the items, and their interaction.

DISCUSSION

The results of the present study, particularly those relating to the subject correlates of the CUES item variance, are perhaps best treated as providing limited evidence for the presence of non-environmemtal factors in the response to the items of a selected environmental assessment instrument. They are neither exhaustive of the possible relationships that might exist between these two domains, nor do they indicate the magnitude of the effects of such non-environmental variables upon item response. What these results do indicate is that for some of the selected subject and item characteristics studied, a reliable portion of the response to a given environmental characteristic can be attributed to certain properties of the subject. Since it is rarely the intent of the constructor of environment scales to provide for a subject component of the item variance -- i.e., it is typically assumed that item response is a function of the environmental characteristic sampled and random error -- this component must be incorporated in the error variance.

Unfortunately, when a component defined upon the subject is present in the item variance, one may be in the unusual position of obtaining as much or more information about the subject than he does about the environmental aspect in which he is interested. In this case, what is really being characterized is the sample of students -- not the environment.

Of particular interest is the lack of association between the reliable judgments of the CUES item ambiguity and the students' reported mean item uncertainty. Students apparently develop, through some experimentally undefined mechanism, a set of stable perceptions and cognitions about the environment to which they are responding which is independent of the number and clarity of the environmental cues available. Given an item like "There is a lot of apple-polishing around here," where we might suspect the environmental cues to be vague and poorly defined, we, nonetheless, find a very low endorsement value -- $p = .04$. This raises the important questions of how stimulus cues are utilized by the student in making an environmental judgment, and secondly, how are these environmental perceptions and cognitions formed. Furthermore, although these perceptions and cognitions are consistent in that they are shared by the sample as a whole, there is the question of the veridicality of such judgments -- i.e., are they congruent with the environmental characteristics sampled. It is doubtful whether items tapping an environmental aspect of high cue indeterminancy can reflect a uniform property of the environment, or lead to high consistency of response. As suggested later, a part of this response consistency, where environmental cues are vague or conflicting, might be attributable to selected personality and need structures of the student. A student who perceives his college

academic environment as highly rigorous and demanding is unlikely to engage in the dissonant response of endorsing the "apple-polishing" item, regardless of the nature and number of cues available on this environmental characteristic.

As hypothesized, certain item parameters were related to the variances of the CUES items, and equally important, they interacted with certain of the subject variables in determining response variability. In particular, certain of the factor analytically defined content classes were related to subject uncertainty and item variability. This, in itself, may be a function of the institution or environment being studied. At Georgia Tech, for example, the emphasis upon academic achievement and competition, and the rigorous pursuit of the acquisition of knowledge is quite noticeable; this set of cognitions being shared by the students, faculty and administration. This particular perceptual system -- best described by Pace (1963) in terms of Scholarship -- provides considerable uniformity of response, high certitude, high p values, and low item variances. On the other hand, the content area labelled awareness by Pace (1963), and described by him in terms of reflectiveness, self-understanding, interest in human welfare, and in general, a concern for "personal, poetic, and political" meaning, is much less clearly articulated at Georgia Tech. In this area the Georgia Tech student apparently has fewer and more poorly defined cognitions upon which to base his responses. In addition, the elements of this content class probably have less subjective utility for the Georgia Tech student during this interval of his life. In defense of the student, however, the demands upon his time leave little opportunity for other endeavors. The low certitude

mean values and response proportions tending towards .50 reflect this lack of a perceptual and cognitive frame with respect to this dimension.

The distribution of certitude and response values for the three other content classes more nearly coincide with those expected by chance. These three dimensions of the college environment do not appear to yield a disproportionately high or low perceptual or response uncertainty. This statement is, in general, relative to the sample employed, as when the mean p values for a given content class appear distributed by chance relative to the other content classes, but are considerably higher or lower than those of another sample for the same class.

The preceding comments suggest that not only are the CUES item variances affected by the selected subject parameters, but that the particular form of the subject-item interaction is also affected by the personality, perceptual, and motivational characteristics of the students being sampled.

As intimated earlier, responses to some items of the CUES are reliably related to selected personality and motivational variables, with these relationships being moderated by item content and the mean uncertainty associated with the item. The environmental area where these effects were most pronounced was Scholarship. Students high in achievement, level of aspiration, or fear of failure were considerably less variable in their response to items drawn from this content class than were students who obtained lower scores. Apparently, students who score high on these traits have a greater need to perceive their environment in a particular way, and are more greatly affected by an environmental cue -- in this case an item describing the environment -- which is discrepant with their environmental expectations. Greater uniformity of response for these students can be treated as an attempt to

maintain congruence between their environmental expectations as reflected in their higher scores on the personality and motivational variables, and their perceptions of the environmental inputs as reflected by their response to the CUES items. For those who prefer dissonance theory terminology (Festinger, 1957), item responses of students high in these personality traits can be viewed as consonance preserving responses between selected self and environmental cognitions. Under this interpretation, a student high in achievement who perceives himself as a hard worker who earns everything he gets, is less likely to engage in a dissonance producing response of endorsing an "apple-polishing," or "personality, pull, and bluff" type item, or any other item involving achievement by means of duplicity.

A similar interpretation, utilizing congruence between aroused expectancies and environmental input as the mechanism underlying item response, can be offered for the other content classes where significant associations were obtained. Here again the perceptual needs of the students as defined by their environmental expectancies are left intact by the highly selective response to the environmental items. Although not indicated by the present data, one would expect that such response distortions -- if they can be so described -- are "easiest" when familiarity with the environment is least.

To this point, we have been stressing the role of item content as moderating the relationship of the selected personality and motivational variables to item response. Mean item uncertainty also tends to serve a similar function, although its effects are less pronounced than item content. A part of this effect may be tied to the increasingly restricted range of CUES item responses as mean item certitude increases. Nonetheless, both item ambiguity -- as perceived by the student sample -- and item content

are related to the nature and magnitude of the correlations between the personality and motivational variables, and item response.

A final statement should be made concerning the relationship between the magnitude of uncontrolled or error variance in item scores, and the method of factor analysis employed in constructing and interpreting the CUES scales. The irrelevant personality and motivational factors demonstrated in this study, serve to increase both item and scale variances. With scale scores defined on a fixed interval -- in this case 0 to 30 -- this increased scale variance has the effect of pulling the institution means closer together. Although factoring group means would appear to disregard subject differences, focusing rather upon institutional differences, it is apparent that subject differences re-emerge by attenuating group mean covariances. Unreliability of the group scale means -- as reflected in the scale variances and differentially contributed to by the personality and motivational factors -- must be considered when using a procedure like that employed in constructing the CUES.

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Table 1

Means, Standard Deviations, and Intercorrelations Among the Four Item Parameters

N = 150

	p	Ambiguity[1]	Certitude	Content
p		-.05	.58	$.42^{c}_{S}$
Ambiguity			-.08	$.28^{c}_{NS}$
Certitude				$.47^{c}_{S}$
$\overline{X}$	74.8	2.9	3.5	
SD	17.3	1.2	.6	

For the product moment correlations an r of .16 is needed for significance at the .05 level.

[1]Values based on only 139 cases

[c]Contingency coefficients

[S]Significant at the .05 level

Table 2

Means, Standard Deviations, and Intercorrelations
Among the Twelve Subject Variables

N = 570

	Achievement	Affiliation	Autonomy	Cog. Struct.	Dominance	Fear Failure	Lev. Aspir.	Order	Soc. Recog.	Succorance	Understanding	Familiarity
Achievement		-.05	.09	.04	.13	.11	.36	.12	-.01	.16	.27	.02
Affiliation			-.31	.00	.12	.10	.03	.09	.29	.32	-.02	-.03
Autonomy				-.13	.10	.13	.08	-.06	-.20	-.42	.12	.06
Cognitive Structure					-.09	.22	.06	.51	.03	.10	-.10	.08
Dominance						-.02	-.05	.03	.26	-.02	.14	-.01
Fear of Failure							.13	.26	.01	.06	-.11	.06
Level of Aspiration								.03	.18	-.02	.22	.03
Order									.10	.02	.03	.01
Social Recognition										.19	-.13	.08
Succorance											-.14	-.08
Understanding												.02
$\bar{X}$	13.6	14.1	8.3	11.2	9.7	6.2	6.7	10.9	11.5	8.3	12.0	3.8
S.D.	3.5	3.5	3.0	3.2	4.3	1.4	1.8	4.1	3.6	4.1	3.4	1.2

For 500 df, an r of .09 is needed for significance at the .05 level.

Table 3

Summary of the Tests of Association

Between the Selected CUES Items and Subject Variables[1]

N = 570

CONTENT

CERTITUDE	Pract.	Aware.	Comm.	Scholar.	Prop.	% S *
2.0-2.5		UND S F NS				100
2.51-3.0	AFF NS ORD NS S.R. S F NS	UND NS F NS	AFF S AUT NS SUC S F NS		C.S. NS DOM S ORD NS F NS	40
3.01-3.5	AFF NS ORD NS S.R. NS F S	UND S F NS	AFF S AUT NS SUC S F NS	ACH S L.A. S F.F. S F NS	C.S. NS DOM S ORD NS F S	54
3.51-4.0	AFF NS ORD NS S.R. NS F NS	UND S F NS	AFF NS AUT NS SUC S F NS	ACH S L.A. S F.F. NS F NS	C.S. NS DOM NS ORD S F NS	38
4.01-4.5	AFF NS ORD NS S.R. NS F NS	UND NS F NS	AFF S AUT NS SUC S F NS	ACH S L.A. NS F.F. S F NS	C.S. NS DOM NS ORD NS F NS	31
4.51-5.0	AFF NS ORD NS S.R. NS F NS	UND NS F NS	AFF S AUT NS SUC NS F NS	ACH NS L.A. NS F.F. NS F NS	C.S. NS DOM NS ORD NS F NS	8
% S *	7	50	53	58	20	

[1] S - Significant at the .05 level: NS - not Significant.

* Familiarity deleted.

APPENDIX A

Descriptions of the Five CUES Scales (after Pace, 1963)

Practicality. Focus is upon the practical or instrumental aspects of the college environment. Organizational and hierarchical features are important. Status is gained, not only by understanding and using the system, but by means of personal associations and political activities.

Community. Characterizes a friendly, cohesive, group-oriented college environment. Group welfare and loyality are stressed, with sympathy and support characteristic.

Awareness. Characterized by a concern for three sorts of meaning -- personal, poetic, and political. Self-understanding, reflectiveness and search for personal meaning are dominant. Idealism and creative expression are valued.

Propriety. Described in terms of polite and considerate interpersonal relations. Thoughtfulness and conventionality are characteristic. Group standards are clearly defined and adhered to.

Scholarship. Emphasis is upon academic achievement and competition, and a serious interest in scholarship. The pursuit of knowledge is rigorous and exhaustive.

APPENDIX B

The 25 CUES Items and Their

Item Parameters

	Item	Content	Ambiguity	Mean Certitude	p^i
10*	It's important socially here to be in the right club or group.	Pract.	5	2.81	.46
76	Many courses stress the speculative rather than concrete and tangible.	Pract.	4	3.42	.57
7	New fads and phases are continually springing up among students.	Pract.	4	3.75	.60
80	In many classes students have an assigned seat.	Pract.	3	4.00	.40
13	Some professors react to questions in class as if the students were criticizing them personally.	Pract.	3	4.51	.94
134	There is considerable interest in the analysis of value systems, and the relativity of societies and ethics.	Aware.	4	2.50	.44
125	An open display of emotion would embarrass most professors.	Aware.	5	2.99	.38
50	There is a lot of interest here in poetry, music, painting, sculpture, architecture, etc.	Aware.	2	3.35	.33
57	Students are actively concerned about national and international affairs.	Aware.	4	3.52	.68

	Item	Content	Ambiguity	Mean Certitude	p^1
130	The expression of a strong personal belief or conviction is pretty rare around here.	Aware.	5	4.02	.31
122	Modern art and music get little attention here.	Aware.	2	4.57	.75
34	Faculty members rarely or never call students by their first names.	Comm.	4	2.98	.50
107	Students often run errands or do personal services for the faculty.	Comm.	5	3.25	.47
36	The professors go out of their way to help you.	Comm.	4	3.53	.43
43	The school has a reputation for being very friendly.	Comm.	4	4.09	.72
31	Students spend a lot of time together at the snack bars, taverns, and in one another's rooms.	Comm.	2	4.54	.74
73	People here are always trying to win an argument.	Prop.	5	2.89	.47
149	Many students seem to expect other people to adapt to them rather than trying to adapt themselves to others.	Prop.	5	3.49	.43
147	Students are expected to report any violation of rules and regulations.	Prop.	2	3.61	.58
66	The person who is always trying to "help-out" is likely to be regarded as a nuisance.	Prop.	5	4.03	.30

	Item	Content	Ambiguity	Mean Certitude	p^1
145	Students frequently do things on the spur of the moment.	Prop.	5	4.52	.73
25	Everyone knows the snap courses to take and tough ones to avoid.	Schol.	4	3.38	.51
101	People around here thrive on difficulty - the tougher things get, the harder they work.	Schol.	4	3.51	.83
27	Personality, pull, and bluff get students through many courses.	Schol.	3	4.09	.11
17	Most of the professors are very thorough teachers and really probe into the fundamentals of their subjects.	Schol.	4	4.57	.91

[1] Untransformed p values

* CUES item number